

# INDIANA'S WATER USE - 1986

Water is one of man's most precious natural resources. In recent years, increased demand from domestic, agricultural, and industrial users along with localized water pollution and periods of drought has focused interest on the availability and uses of water in Indiana. An accurate inventory of water usage is essential to water management and planning because it establishes current needs, and provides a data base for estimating future demands. This type of data is necessary to anticipate and avoid water conflicts.

## WATER MANAGEMENT PROGRAM

With the passage of the Water Management Act (IC-13-2-6.1) in 1983, Indiana initiated a program to inventory water use throughout the state. Indiana's General Assembly has directed the Natural Resources Commission to administer this statute through the Department of Natural Resources. One aspect of the Water Management Act calls for the registration of all significant water withdrawal facilities. As defined in the act, such a facility is one capable of withdrawing more than 100,000 gallons of water per day from ground water, surface water, or the two combined.

Indiana's registration system includes the following six water use categories: irrigation (agricultural, golf course, landscaping); public supply (water works, mobile home parks); industrial (process and cooling water, waste assimilation, sand and gravel operations); energy production (power generation, coal preparation, heating and cooling); miscellaneous (ski resorts, fish and wildlife areas); and rural use (livestock watering, fish hatcheries).

At the present time there are approximately 2600 registered facilities which represent about 4000 wells and 1000 surface intakes. Of these 2600 registered facilities, the breakdown by water use category is as follows: irrigation, 1332; public supply, 686, industrial, 455; energy production, 67; miscellaneous, 43; and rural use, 12.

One water use category unaccounted for in Indiana's registration system is domestic self-supplied use. Although domestic self-supplied water use is one of the lowest withdrawal uses in the state, 30% of the state's population satisfy their water needs in this manner. Daily water use estimates for this category range from 50-75 gallons for people in rural areas up to 100 gallons for those in urbanized areas.

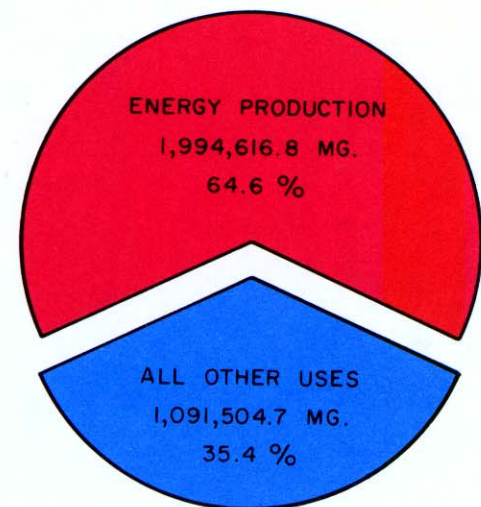


Figure 3. Water Use Comparison

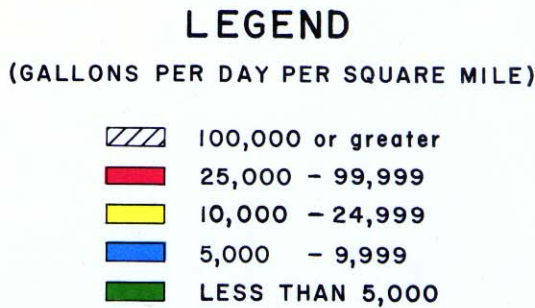
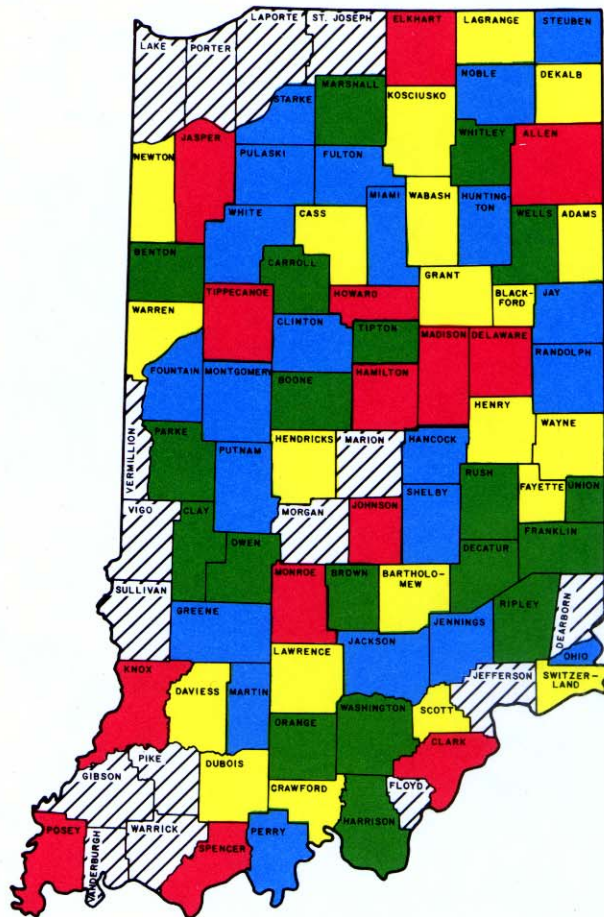


Figure 1. Water Withdrawals

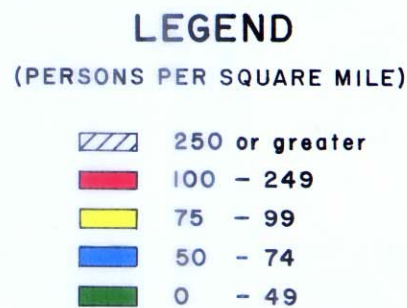
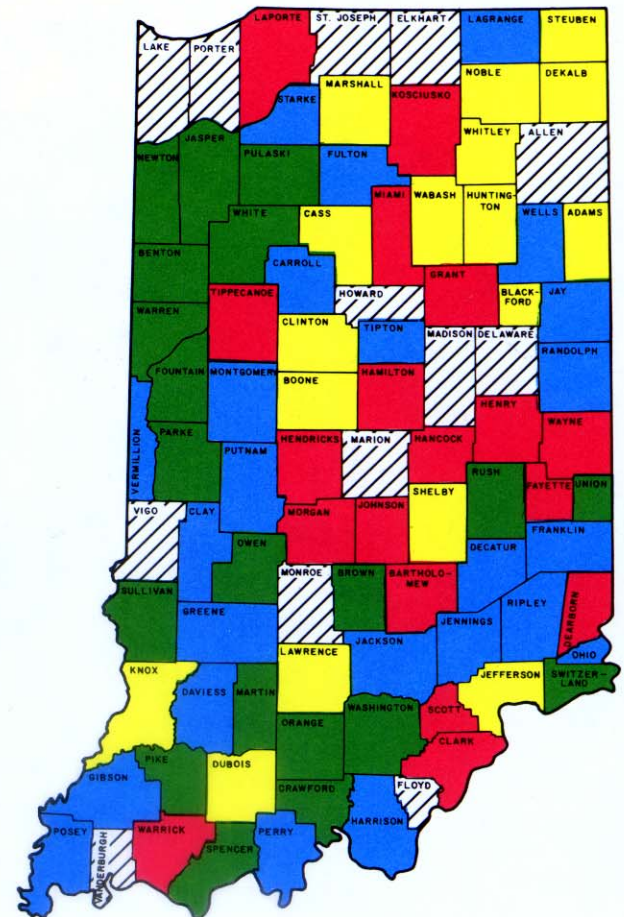


Figure 2. Population Density

## ANNUAL WATER USE REPORTS

Owners of registered facilities are required to report their water withdrawals on an annual basis. At the time of writing, 99% of the registered facilities had submitted their annual water use reports. During 1986, owners of registered facilities reported withdrawals totalling 3.08 trillion gallons of water. To illustrate the magnitude of this number, 1 million gallons (1 millionth of 1 trillion gallons) would cover a football field to a depth of approximately 2 feet 4 inches.

Of this total (3.08 trillion gallons), surface water withdrawals accounted for 2.91 trillion gallons (94.3%) and ground water use totall- ed 174.9 billion gallons (5.7%).

The quantity of water withdrawn in 1986 on- ly amounted to 41.6% of the total withdrawal capability. Surface water comprised of 6.4 trillion gallons and ground water comprised 1.0 trillion gallons of the total withdrawal capability.

In general, counties with high water usage are those with high population densities (see Figures 1 and 2). A few counties with sparse populations (Pike, Sullivan, and Vermillion) are major water users due to power generating stations with high surface water intake capabilities.

## ENERGY PRODUCTION USE

In Indiana, water from the Ohio, Kankakee, Wabash, East Fork of White and West Fork of White Rivers, and Lake Michigan were the principle supply sources of cooling water for the production of energy. Energy production

represented 64.6% of the total water usage in 1986 (see Figure 3). Withdrawals for energy production during 1986 averaged 5.46 billion gallons per day. Surface water withdrawals represent 99.5% of this figure. Over 99% of the surface water withdrawn for energy production is by coal fired power plants which use water for cooling purposes. This water is returned to its source and available for re-use within a few days.

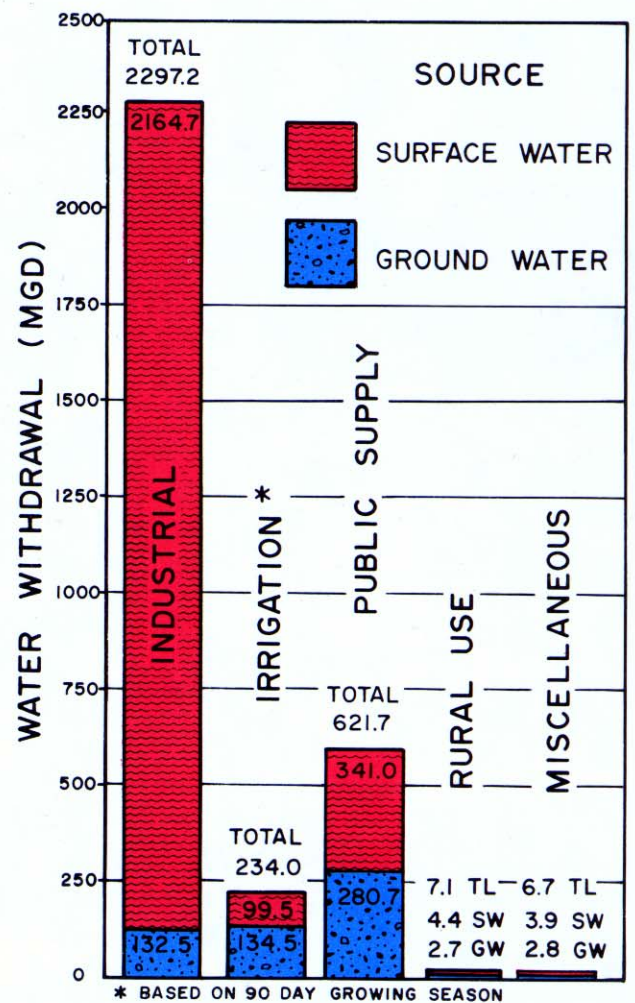


Figure 4. Withdrawals by Type and Source

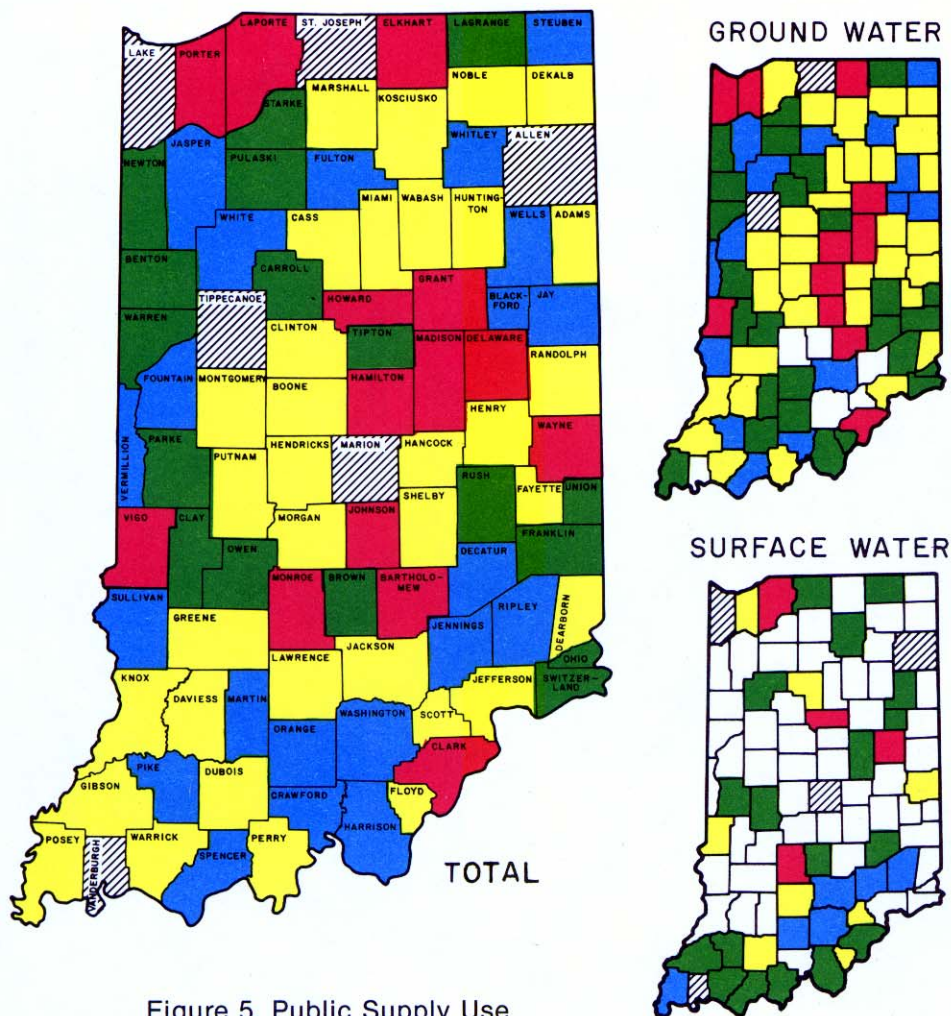


Figure 5. Public Supply Use

#### LEGEND

#### WATER WITHDRAWALS (MILLION GALLONS PER DAY)

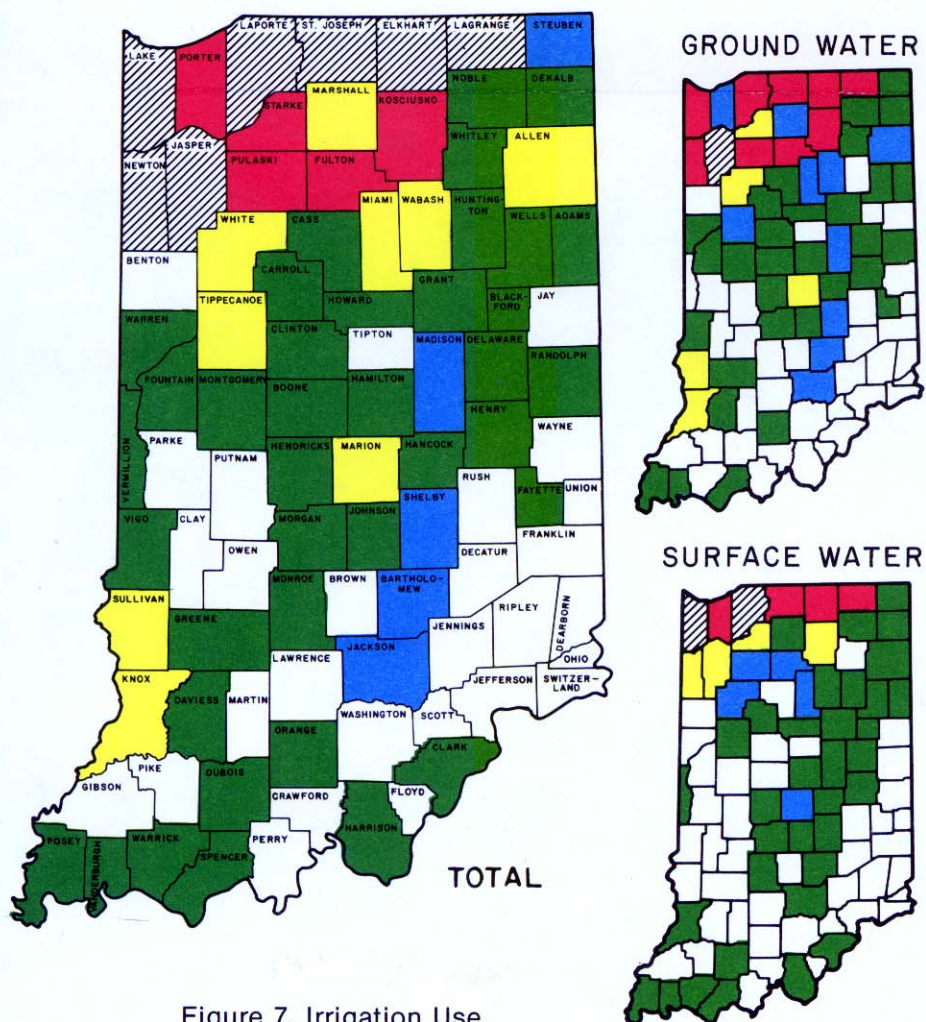
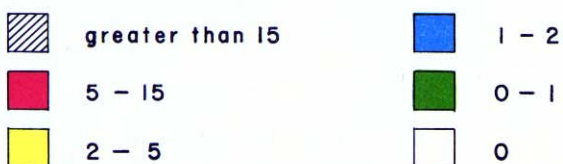


Figure 7. Irrigation Use

NOTE: This report was prepared by Water Management Branch members Tom Greenawalt and Mitch Mosier. Don Spilmon assisted in its production.

#### FOR MORE INFORMATION CONTACT



INDIANA DEPARTMENT OF NATURAL RESOURCES  
Division of Water  
2475 Directors Row  
Indianapolis, IN 46241  
Telephone (317) 232-1106

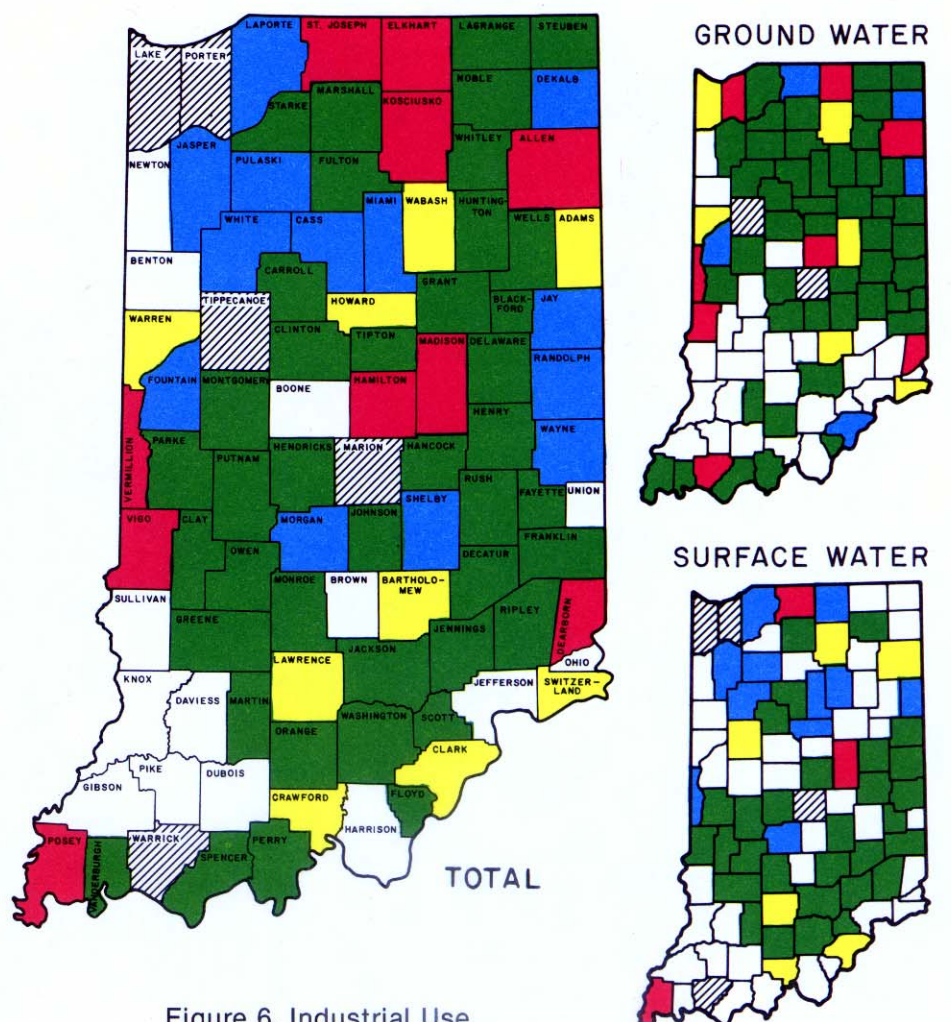


Figure 6. Industrial Use

#### PUBLIC SUPPLY USE

The amount of water withdrawn in 1986 for public supply systems averaged 621.7 million gallons per day (MGD). Of the total amount withdrawn, 341.0 MGD was surface water and 280.7 MGD was ground water (Figure 4). The largest public supply use was in Marion County (125.0 MGD), the most populated county in the state. Most water utilities rely on ground water due to its more consistent quality and lower treatment costs. A few utilities with limited access to adequate quantities of ground water rely on surface water sources (Figure 5).

#### INDUSTRIAL USE

Industrial self-supplied use for 1986 averaged 2297.2 MGD. Surface water use amounted to 2164.7 MGD and ground water use was 132.5 MGD (Figure 4). Surface water withdrawals from Lake Michigan in Lake and Porter Counties account for over 77% of all industrial self-supplied withdrawals in Indiana. Information concerning industrial water use is highlighted in Figure 6.

#### IRRIGATION USE

Withdrawals for irrigation during 1986 averaged 234.0 MGD. Of this amount, 99.5 MGD was withdrawn from surface water and 134.5 MGD was withdrawn from ground water. These figures are based on a 90-day growing season (see Figure 4). The majority of withdrawals took place in the northern third of the state (see Figure 7). The counties with the largest water withdrawals for irrigation purposes were Lake (36.0 MGD) and LaPorte (27.4 MGD) Counties.

#### WATER USE TRENDS

Figure 8 illustrates water use trends for the industrial, public supply, and irrigation water use categories during the calendar year. Peak demands for industrial use occur through the months of March and August. Increased recreational and leisure-time activities account for the peak use of public supply water during the summer months. Irrigation generally occurs in Indiana from June through September, with July and August being the months of peak use.

Figure 8. Water Use Trends

